

IN THE CLAIMS

Claim 1 (Currently Amended) A method of winding a yarn in a plurality of superposed layers onto a cylindrical support ~~(20)~~ having a longitudinal axis ~~(X)~~ and fastened around a spindle ~~(21)~~ driven in a rotational movement, in which the yarn is wound by running over a yarn guide ~~(34)~~ which moves in a backward and forward motion (M) parallel to the longitudinal axis ~~(X)~~ of the support and is controlled so as to form a bobbin having a shape with two frustoconical ends, said bobbin comprising a base cone ~~(12)~~ having a first generatrix ~~(L2)~~ inclined at ~~an a first~~ acute angle ~~(α)~~ to the longitudinal axis ~~(X)~~ and an unwind cone ~~(13)~~ having a second generatrix ~~(L3)~~ inclined at ~~an a second~~ acute angle ~~(β)~~ to the longitudinal axis ~~(X)~~, and a main body ~~(11)~~ which joins the two frustoconical ends and has a frustoconical shape, said main body ~~(11)~~ comprising a third generatrix ~~(L1)~~, ~~an a first~~ end section ~~(11a)~~ which forms a base ~~(12a)~~ of the base cone ~~(12)~~, said ~~base ~~(12a)~~~~ having a diameter D1 and an and a second end section ~~(11b)~~ which forms a base ~~(13a)~~ of the unwind cone ~~(13)~~, wherein a diameter of said base ~~(13a)~~ of the base cone is different than a diameter of the base of the unwind cone having a diameter D2, wherein D1 and D2 are different, said method of winding a yarn comprising,

governing the movement of the yarn guide with a first rule for forming a part of the base cone ~~(12)~~ wherein a last layer of yarn deposited according to said first rule going as far as the end ~~(13b)~~ of the unwind cone, and a second rule for terminating the base cone ~~(12)~~ while forming the main body ~~(11)~~ and the unwind cone ~~(13)~~, wherein a first layer of yarn deposited according to the second rule is parallel to a last layer of yarn deposited according to the first rule.

Claim 2 (Currently Amended) The method according to Claim 1, wherein the first rule governing the movement of the yarn guide comprises establishing a plurality of backward and forward motions parallel to an x axis between an initial position (x_0) and a final position (x_z), ~~said positions such that imaginary lines passing through the initial position (x_0) and the final position (x_z) and intersecting the support and each end of the sections of the bobbin are perpendicular to the support (20) and to each of the end sections (12b, 13b) of the bobbin~~, wherein each backward and forward motion comprises:

[[-]] a starting position (x_j), a first movement having ~~an~~ the initial position (x_0) and a the final position (x_z), wherein said starting position for a movement following the initial movement or a movement subsequent to the initial movement is to the rear of the starting position of a previous movement and in front of the final position (x_z), a position for the last movement is defined by the diameter ~~D1~~ of the base cone ~~(12)~~,

[[-]] an intermediate position (x_i) for reversal of the yarn guide, wherein an intermediate position for a movement is always to the rear of an intermediate position for a previous movement and is to the front of the final position (x_z), and

[[-]] an ending position (x_{j+1}) which is a starting position for the subsequent movement wherein a last intermediate position is the final position (x_z) and the last movement does not cause a reversal.

Claim 3 (Currently Amended) The method according to Claim 2, wherein the second rule governing the movement of the yarn guide comprises executing backward and forward motions parallel to the longitudinal axis ~~(X)~~, between an initial position, said initial position the final position (x_z) of the yarn guide according to the first rule and a terminal position (x_t) between the final position (x_z) according to the first rule, defined by the diameter ~~D2~~ of the

unwind cone ~~(13)~~, and the starting position for the last movement according to the first rule, each backward and forward motion comprising:

[[-]] a starting position (x_k), wherein a position of the first movement is the final position (x_z) according to the first rule, and a position for a subsequent movement is to the rear of the previous movement,

[[-]] an intermediate position (x_m) for reversal of the yarn guide, wherein an intermediate position for the first movement is an ending position corresponding to a position of reversal of a movement at the final position (x_z) according to the first rule, and

[[-]] an ending position (x_{k+1}) wherein said ending position is a starting position for the following movement,

[[-]] the starting and ending positions for a movement always in front of a position for a previous movement to shorten a travel of each movement.

Claim 4 (Currently Amended) The method according to Claim 2, wherein a plurality of successive starting positions (x_j) according to the first rule are separated by ~~an equal~~ a first distance ~~(δ)~~.

Claim 5 (Currently Amended) The method according to Claim 2, wherein a plurality of successive intermediate reversal positions (x_i) according to the first rule are defined by the equation $x_i = x_0 + i\Delta$, where Δ is a positive constant which depends on a slope to be given to the third generatrix ~~(L1) of the main body (11)~~, and i varies from 0 to Z , where Z is a non-zero integer.

Claim 6 (Currently Amended) The method according to Claim 3, wherein a plurality of successive starting positions (x_k) according to the second rule are separated by ~~an equal a~~ second distance (δ').

Claim 7 (Currently Amended) The method according to Claim 3, wherein a plurality of successive intermediate reversal positions (x_m) according to the second rule are spaced apart by ~~a the first distance (δ), said distance the same as a distance separating the plurality of successive starting positions (x_j) according to the first rule.~~

Claim 8 (Currently Amended) The method according to Claim 1, wherein the yarn guide (34) is moved concomitantly with ~~a the~~ motion (M) parallel to the longitudinal axis (X) in a coplanar motion (N) perpendicular to the longitudinal axis (X) so that a resulting motion is parallel to the third generatrix ($L1$) of the main body (11).

Claim 9 (Currently Amended) The method according to Claim 8, wherein a plurality of motions parallel (M) and perpendicular (N) to the longitudinal axis (X) of the yarn guide (34) is produced by an electronic drive device ~~(36)~~.

Claim 10 (Currently Amended) The method according to Claim 8, wherein the yarn guide (34) is moved by running along mechanical guiding means placed parallel to the third generatrix ($L1$) of the main body (11) being formed.

Claim 11 (Currently Amended) The method according to Claim 1, for which the yarn guide (34) comprises a cam, wherein the speed of rotation of the cam is varied.

Claim 12 (Currently Amended) The method according to Claim 1, wherein a speed of rotation of the spindle (21) is varied.

Claim 13 (Currently Amended) The method according to Claim 1, wherein a speed of movement of the yarn guide parallel to the longitudinal axis (~~X~~) is varied.

Claim 14 (Cancelled).

Claim 15 (Currently Amended) A frustoconical bobbin obtained by the method according to Claim 1, wherein ~~an~~ the first acute angle of inclination (α) of the first generatrix (L2) of the base cone (12) is between 40° and 75°.

Claim 16 (Currently Amended) A frustoconical bobbin obtained by the method according to Claim 1, wherein the second acute angle of inclination (β) of the second generatrix (L3) of the unwind cone (13) is between 30° and 60°.

Claim 17 (Currently Amended) A method of winding a yarn in a plurality of superposed layers onto a cylindrical support having a longitudinal axis and fastened around a spindle driven in a rotational movement, in which the yarn is wound by running over a yarn guide which moves in a backward and forward motion (M) parallel to the longitudinal axis of the support and is controlled so as to form a bobbin having a shape with two frustoconical ends, said bobbin comprising a base cone having a first generatrix inclined at a first acute angle to the longitudinal axis and an unwind cone having a second generatrix inclined at a

second acute angle to the longitudinal axis, and a main body which joins the two frustoconical ends and has a frustoconical shape, said main body comprising a third generatrix, a first end section which forms a base of the base cone, and a second end section which forms a base of the unwind cone, wherein a diameter of said base of the base cone is different than a diameter of the base of the unwind cone, said method of winding a yarn comprising,

governing the movement of the yarn guide with a first rule for forming a part of the base cone wherein a last layer of yarn deposited according to said first rule going as far as the end of the unwind cone, and a second rule for terminating the base cone while forming the main body and the unwind cone, wherein a first layer of yarn deposited according to the second rule is parallel to a last layer of yarn deposited according to the first rule, wherein the first acute angle of inclination of the first generatrix of the base cone is between 40° and 75°, and ~~The frustoconical bobbin according to Claim 15,~~ wherein the yarn has a waviness (52) to allow two coils with two superposed layers to intersect at a crossover angle (γ).

Claim 18 (Currently Amended) The frustoconical bobbin according to Claim 17, wherein the crossover angle (γ) is between 0.5° and 6°.

Claim 19 (Currently Amended) The frustoconical bobbin according to Claim 15, wherein said bobbin has a length, measured between the two end bases (12b, 13b) of the base and unwind cones between 150 mm and 500 mm.

Claim 20 (Previously Presented) The method as claimed in Claim 1, comprising collecting a multiplicity of glass filaments formed from a plurality of streams of molten glass

wherein said streams of molten glass emanate from a plurality of orifices of a bushing and
combing the glass filaments into said yarn.